Available on: https://jsshrs.ep-journals.org/ E-ISSN: 3051-3561, P-ISSN: 3051-3553

Journal of Social Science and Human Research Studies

Volume : 02 Issue : 07 July-2026

Exploring Teacher Beliefs and Experiences in Implementing Universal Design for Learning in Early Childhood Inclusive Classrooms

Alexander Gariba
Kent State University, USA

Esther Shardey
Independent Researcher, Texas, USA

Published Date: July 20, 2026 **Article DOI: 10.65150/EP-jsshrs/V2E7/2026-30**

ABSTRACT: Universal Design for Learning (UDL) provides a framework for inclusive, learner-centered early childhood classrooms. Despite its growing advocacy, little is known about teachers' beliefs, experiences, and practices in implementing UDL. The review is a synthesis of evidence on conceptualization and implementation of UDL by teachers in early childhood inclusive teaching. The synthesis demonstrates conceptualization of UDL as a universal, inclusive pedagogic model based on proactive design, learner variability, and equity as opposed to a remedial or special education model. Teachers demonstrated predominantly positive attitudes toward UDL, linking it to inclusion, engagement, and ethical, relational practice, while also reporting workload, training gaps, and institutional constraints as barriers to implementation. Effective implementation is characterized by purposeful planning, data-driven decision-making, the practice in collaboration, and the long-term professional learning. The main principles of UDL were systematically manifested in the classroom setting through multimodal presentation, multiple opportunities to play and act, and adaptable interaction models that encouraged self-direction, control, and agency. Structural conditions, leadership support, digital infrastructure, and cultural responsiveness strongly shaped implementation quality and sustainability. Overall, teachers view UDL as a flexible, universal framework that enhances engagement, autonomy, and inclusion. Planning, professional learning, collaboration and sustained support are required to achieve effective implementation. These findings highlight the need for targeted teacher training and institutional strategies to support sustained UDL adoption.

KEYWORDS: Universal Design for Learning, Early Childhood Education, Inclusive Pedagogy, Teacher Beliefs, Professional Development

1.0 INTRODUCTION

Inclusive education has increasingly shaped how early childhood classrooms are organized and how teaching is understood. Educators are now expected to design learning environments that respond to wide variations in ability, development, and experience, rather than relying on narrow models of standardized instruction [1, 2]. Inclusive early childhood classrooms, where children with and without disabilities learn together, bring these demands into sharp focus and require pedagogical approaches capable of accommodating complexity rather than managing difference as exception [3]. Universal Design for Learning (UDL), a proactive framework grounded in cognitive neuroscience and educational theory, has emerged as one of the most promising approaches to meeting this demand. By offering multiple means of representation, action and expression, and engagement, UDL shifts the paradigm from retrofitting instruction for individual children to designing flexible learning experiences that are accessible from the outset for all learners [4]. Despite growing institutional endorsement of UDL, questions persist about how early childhood teachers understand, embrace, and enact its principles in inclusive classroom practice.

Teacher beliefs are widely recognized as a powerful determinant of instructional decision-making. The relationship between what teachers believe about learner diversity and how they structure their classrooms directly influences the quality of inclusive education children receive [5, 6]. In early childhood, this is particularly consequential, as the foundational experiences children have in their earliest years of schooling shape long-term developmental and academic trajectories. Although many teachers express support for inclusive education, research consistently shows a gap between stated commitments and enacted practice [7]. This tension is commonly linked to limited preparation during initial training, uneven access to sustained professional learning, and weak institutional conditions that make inclusive practice difficult to sustain [8, 9].

The UDL framework organizes its theoretical foundations around three neurological networks: affective, recognition, and strategic [10]. For early childhood educators, this architecture suggests concrete, developmentally relevant practices, among them offering content through multiple modalities, giving children meaningful choice in how they demonstrate understanding, and selecting materials that sustain curiosity across a range of ability levels [11, 12]. The 2024 release of UDL Guidelines 3.0 extended this foundation by placing greater emphasis on equity, learner identity, and belonging, considerations that carry particular weight in early childhood [4].

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

Translating these principles into daily classroom practice, however, proves considerably harder than adopting them in principle. Even teachers who value UDL often find consistent implementation elusive, a pattern documented across multiple studies [8, 13, 14]. Large class sizes, inadequate staffing, limited access to targeted professional development, and scarce material resources each contribute to this difficulty [7, 15]. Compounding the problem is a research base that has concentrated predominantly on primary, secondary, and post-secondary settings, leaving early childhood research comparatively underexamined [15]. Early childhood teachers operate within a distinct professional context shaped by developmentally appropriate practice, play-based pedagogy, and close family partnerships, factors that interact with UDL implementation in ways that warrant dedicated investigation [9, 16].

This review addresses that gap by examining existing research on teachers' beliefs and experiences of UDL in inclusive early childhood classrooms. It analyses how teacher beliefs shape implementation, the barriers and supports teachers encounter in practice, and the implications of these patterns for teacher education and professional learning. Through synthesis of the current evidence, the review seeks to inform more grounded and context-sensitive approaches to supporting early childhood educators working at the intersection of inclusion and UDL.

2.0 METHODS

This narrative review adopted a systematic and transparent process to identify and synthesize empirical research on teachers' beliefs and experiences of UDL implementation in inclusive early childhood classrooms. Searches were conducted across Scopus, Web of Science, PsycINFO, and Education Source using structured keyword combinations related to UDL, teacher beliefs, inclusive education, early childhood contexts, and classroom practice. Eligible studies were peer-reviewed journal articles published in English that focused on teachers or preservice teachers, UDL implementation, and inclusive early childhood or elementary settings. Screening proceeded in three stages: title review, abstract review, and full-text assessment, with selection guided by relevance and conceptual fit. Data were extracted using a structured framework and analysed through thematic synthesis, allowing patterns, contrasts, and conceptual relationships across studies to be identified. Sixteen peer-reviewed articles met the inclusion criteria and formed the basis of the final synthesis.

3.0 FINDINGS

3.1 Teacher Conceptualizations of UDL

Throughout the literature, teachers regularly understood UDL as an inclusive, learner-centered, and universal learning model to be applied to all learners, and not a special education-based model or remedial intervention [7, 17-25]. UDL was broadly interpreted as being based on three main principles of multiple means of engagement, representation, and action and expression which educators identified as tools of facilitating access, participation, and learning among all children [7, 19, 22, 25]. Notably, UDL has been theorized as proactive design, where accessibility and accommodation are built into consideration of instructional planning and implementation, not reactively implemented [7, 21, 23-25].

The difference between UDL and differentiated instruction was well identified by teachers who defined UDL as the general design of classroom instruction, and differentiation as the personalized support through the general design [19]. UDL was connected to Tier 1 instruction in Multi-Tiered Systems of Support in early childhood, which supports its status as a whole-class access model, as opposed to an intervention framework [19]. Teachers also framed UDL as being consistent with early childhood best practices, developmentally appropriate pedagogy and inclusive education standards, reinforcing its perceived legitimacy in professional practice [16, 19, 23, 25].

UDL was not considered a fixed checklist or formulaic model but a pliable guiding framework that enables educators to design learning environments in a responsive manner to classroom circumstances, learner diversity, and developmental requirements [23, 24, 26]. According to teachers, UDL is a professional attitude and mode of thought that is integrated into daily teaching rather than a specific teaching tool [26]. The terminology changed to conceptualize UDL not so much as a framework but as a dynamic design process marked by continuous responsiveness, adaptation and pedagogical decision-making [26].

Teachers' conceptualizations reflected a broader epistemological shift in how learner diversity was understood. Variability was re-defined as ordinary and not extraordinary, and inclusion was re-defined as a universal duty of general education rather than a model based on individual accommodation [20, 21]. Teachers moved away from deficit-based views of disability toward asset-based understandings of learner capacity, reframing learning difficulty as a need for access, scaffolding, and instructional support rather than inability [26]. These ideological transitions were incorporated into pedagogy and influenced the expectations of instruction, classroom spaces, and reactions to student learning and behavior [26].

3.2 Teacher Attitudes, Beliefs, and Dispositions Toward UDL and Inclusion

Teachers expressed predominantly positive attitudes toward UDL, viewing it as a mechanism for promoting inclusion, engagement, equity, and participation for all children [20-22]. Positive beliefs about inclusion were strongly associated with favorable perceptions of UDL and greater willingness to implement UDL-aligned practices [22]. Teachers who believed that all students could succeed with appropriate support demonstrated higher confidence, instructional flexibility, and openness to inclusive pedagogy [22].

Ethical and relational dimensions of UDL were evident in teacher narratives. Empathy was identified as a core construct informing inclusive practice, instructional design, and relationships between teachers and students [26]. According to teachers, empathy was considered at the center of how learners experience what they go through, learning obstacles, family backgrounds, and cultural backgrounds, which guided pedagogical choices as well as classroom relationships [26]. UDL was therefore not only a technical framework but also a relational and ethical orientation toward inclusive education [26].

At the same time, tensions were reported. Some teachers perceived UDL as an additional workload, particularly in contexts with limited training and support, which constrained adoption [22]. The misinterpretation of UDL was also reflected where teachers only identified it as technology use or supports given to children with disabilities [22]. The beliefs of teachers concerning professional competence, workload, and expectations by the institution influenced the involvement in UDL implementation [22].

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

3.3 Intentional Planning, Proactive Design, and Instructional Preparation

The experiences teachers had with UDL implementation were always planned purposefully and supported by explicit instructional design instead of crisis accommodation [7, 17, 20, 21, 23-25]. Planning was characterized as being purposeful and exact, and entailed clarity of instructional objectives, learning activities that are sequentially arranged with intent, and coordinated strategies with learner requirements [21]. UDL informed lesson planning, curriculum development, and structuring of instruction, incorporating accessibility within instructional practices [7, 21, 24, 25].

The implementation was usually gradual and progressive as opposed to instant or revolutionary [19, 20, 25]. Teachers stated that they usually started with one principle of UDL and added others over time as confidence and competence grew, describing UDL implementation as a long-term career learning process [19, 20, 25].

Dedicated planning time was another important enabling condition, especially in early childhood inclusive classrooms [17]. Instructors participated in organized collaborative planning, which was aimed at assigning a strategy, justifying research, and meeting the needs of students [17, 19]. UDL implementation was uneven, latent or shallow when planning time was interrupted or missing [17].

3.4 Data-Informed, Evidence-Based, and Contextually Responsive Instruction

The implementation of UDL was always based on data-grounded and evidence-based decision-making [17, 18]. Classroom observations, assessment, IEP documentation, functional vision assessments, learning media assessments, and family input were used by teachers to inform the design of instruction [17, 18]. Sensory profiles, communication requirements, positioning requirements, and developmental readiness were included in planning processes to ensure that there was access to learning experiences [18].

Family views were considered to be reliable sources of data, which informed home-language representation, culturally responsive practices, and communication strategies [17-19, 27]. Teachers proactively analyzed data to make changes in pacing, strategies and redesign activities so that the implementation of UDL was a purposeful, contextual and responsive process and not generic [17, 18].

3.5 Classroom Enactment of UDL Principles

3.5.1 Multiple Means of Representation

Teachers utilized multimodal and multisensory forms of representation, such as books, read-alouds, props, manipulatives, visual support, felt boards, photographs, real-world objects, tactile materials, multimedia, digital storytelling, videos, multimedia platforms, and assistive technologies [7, 12, 18, 19, 23-25, 28]. Instruction combined auditory, visual, tactile, and multimodal inputs to enhance comprehension and reduce sensory and cognitive barriers [12, 18, 19].

Culturally responsive and linguistically inclusive representation included home-language supports, bilingual materials, manual signs, culturally relevant resources, and family-connected content [18, 19, 27]. Educators were always accompanying oral education with visual, realistic, and practical models to improve accessibility [12, 19, 23, 24].

3.5.2 Multiple Means of Action and Expression

A wide variety of expressions were offered by teachers such as drawing, oral explanations, conversations, art projects, visual reactions, hands-on demonstrations, digital records, video records, and tablet-based applications [7, 12, 18, 19, 23-25, 27, 28]. The AAC systems, such as symbols, communication boards, speech-generating devices, manual signs, and tablet-based communication tools, were also used by the teachers in inclusive early childhood [18]. The expression options were determined by the sensory needs, family preferences, home language, motor skills, and positioning requirements [18].

Children were offered choices in how to participate and demonstrate learning through verbal, gestural, visual, musical, physical, collaborative, and technology-mediated formats [12, 19, 23, 27]. Teachers used modelling, scaffolding, guided practice, checklists, peer feedback, and structured supports to facilitate participation [23, 24].

3.5.3 Multiple Means of Engagement

Interest-based learning, play-based activities, movement, songs, tactile exploration, collaborative learning, group work, small-group instruction, flexible seating, and multiple participation options were among the engagement strategies [7, 12, 18, 19, 23-25, 27, 28]. Choice was one of the core mechanisms, which included seating, activity, tools, materials, partners, forms of participation, and forms of expression [12, 19, 27].

Motivation and inclusion were improved using culturally and community-related materials, family-related content, and culturally responsive resources [19, 27]. Outdoor exploration, walks, gardening, scavenger hunting, and other nature-based learning activities were employed to encourage motivation, creativity, self-regulation, and confidence [23].

3.6 Autonomy, Self-Regulation, and Learner Agency

Across the reviewed literature, autonomy and choice were the key factors in engagement and inclusion [12, 23, 27]. In order to encourage independence and self-determination teachers incorporated self-monitoring, goal-setting, behavioral tracking, self-assessment cues, learning logs, and reflection practices [23, 27]. Such practices created a sense of learner agency, learning ownership, and engagement throughout inclusive classrooms [10, 17, 20, 23, 27].

3.7 Professional Knowledge, Capacity Building, and Teacher Development

The key to the successful implementation of UDL was teacher preparation and professional learning [7, 16, 20, 22, 24]. The models of sustained, practice-oriented professional development, which involved collaborative planning, peer learning, co-teaching, and classroom-based support, were linked to higher levels of confidence, competence, and implementation fidelity [7, 19, 20, 22]. Professional development over years led to long-term knowledge and confidence growth, but short-term training led to short-term improvement and a plateau thereafter [20, 22, 24].

Pre-service teachers were found to have positive dispositions to UDL, though with a large degree of variability in applying the knowledge to practice and with uneven growth and development in their implementations [28]. Practical competence was limited by lack of training, coursework and lack of organized preparation, even when there was conceptual familiarity [22, 24, 28].

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

Reflective practice supported professional identity development, instructional self-awareness, and inclusive values [28]. Teachers described UDL as shaping how they think about learners, design instruction, and interpret learning and behavior, forming an integrated belief–practice system [26].

3.8 Collaboration, Co-Teaching, and Collective Implementation Cultures

Collaborative planning, co-teaching, and shared responsibility emerged as core implementation structures [17, 19, 20]. Cultures of collective implementation were related to increased fidelity, enhanced confidence, and sustained practices of inclusion [17, 20]. Teacher collaboration stretched UDL out of the individual classroom into larger institutional transformation [20].

3.9 Psychological Safety, Classroom Climate, and Social Inclusion

Classrooms based on UDL were described as psychologically safe, inclusive, and participatory learning environments [10, 17, 20, 21]. According to teachers, there were more students engaged, less fear of failure, better interaction with peers, a sense of belonging, better social participation, and readiness to participate in learning activities [10, 17, 20].

3.10 Structural, Institutional, and System-Level Conditions

UDL implementation was greatly influenced by structural and systemic factors. Barriers included limited resources, large class sizes, insufficient staffing, rigid curricula, standardized testing pressures, limited planning time, misaligned institutional priorities, lack of administrative support, and insufficient professional development [7, 17, 18, 22, 24, 28]. Undergraduate teacher education programs were widely reported as insufficiently preparing teachers for UDL implementation [7, 24].

Sustained implementation was strongly linked to leadership support, policy alignment, institutional commitment, and embedded professional learning structures [17, 20]. Reliance on individual teacher commitment alone led to implementation decay over time [20]. The quality of implementation required material readiness, such as prior preparation of visual schedules, routines, instructional aids, and learning material [17].

3.11 Technology Integration, Digital Equity, and Infrastructure

Technology was consistently identified as a central facilitator of UDL implementation across representation, engagement, and expression [12, 19, 22]. Digital competence and access to technological resources impacted the attitudes of teachers to UDL [22]. Digital inequities restricted the capacity to implement in under-resourced settings, which underscores the necessity of infrastructure investment and staff training to achieve equitable UDL implementation [22].

3.12 Cultural Responsiveness and Contextual Adaptation

Cultural, contextual, and resource-related factors influenced UDL implementation [22, 27]. Teachers tailored practices to the reality of the locality, availability of resources, training, and policy environments [22]. Cultural responsiveness was incorporated by the use of multilingual materials, cultural/relevant materials, family engagement, and integrating the identities, traditions, and community knowledge of children in curriculum development [27].

3.13 Evidence Gaps and Research Limitations

The evidence base remains limited by small sample sizes, concentration on preservice teachers, limited longitudinal research, and restricted geographic diversity [22]. There is limited evidence on long-term institutionalization of UDL and sustained belief-practice transformation. Underrepresentation of low-resource and marginalized settings serves as an indication of the necessity of contextually grounded qualitative research of teachers' lived experiences, systemic barriers and implementation processes that are culturally situated [22].

4.0 IMPLICATIONS FOR POLICY AND PRACTICE

4.1 Teacher Preparation and Professional Development

The persistent gap between teachers' conceptual familiarity with UDL and their capacity to translate it into sustained classroom practice highlights the inadequacy of short-term, information-delivery models of professional development. Evidence across the reviewed literature indicates that multi-year, practice-embedded, and collaboratively structured professional learning is necessary to produce meaningful and lasting growth in both UDL knowledge and implementation confidence [7, 9]. Professional development must be specific, ongoing, and directly linked to teachers' daily instructional challenges rather than confined to one-off workshops or introductory modules. Teachers have consistently stressed that professional development should be specific and ongoing to guide their daily practices, with some requesting access to UDL resource persons and specialists to support day-to-day implementation and troubleshoot instructional challenges [7].

Reform is also needed within pre-service teacher education. UDL preparation remains marginal within many undergraduate programs and is often insufficient for the realities of inclusive teaching, particularly in early childhood settings where developmental diversity, cultural context, and relational pedagogy intersect [29]. More empirical studies and comparative training designs are needed to understand how pre-service and in-service teachers' beliefs about UDL can be more effectively developed to meet the distinct demands of inclusive teaching across different cultural and contextual settings [21]. Reflective practice components and structured observation of UDL-aligned classrooms should be standard features of early childhood teacher preparation, as these experiences support the development of professional identity, inclusive values, and instructional self-awareness.

4.2 Institutional Conditions and Leadership

The evidence shows that UDL cannot be sustained through individual teacher effort alone. Its implementation is shaped primarily by organizational conditions. Time for joint planning, staffing capacity, administrative backing, access to materials, and technological resources all determine whether inclusive design becomes part of everyday practice or remains aspirational. Without these supports, UDL tends to fragment into isolated classroom strategies rather than functioning as a coherent institutional approach. Long-term viability therefore depends on stable leadership, sustained professional investment, and coherence between school-level practice and broader policy direction [30, 31]. Leadership plays a central role in this process. In settings where school and center leaders actively support collaboration, shared planning, and professional learning, UDL is more likely to develop as an institutional approach rather than individual accommodation.

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

Digital equity must also be addressed as a component of institutional readiness. Technology integration is a significant enabler of all three UDL principles. However, unequal access to devices, platforms, and digital infrastructure creates implementation disparities across settings, particularly in under-resourced communities and developing countries. In such environments, infrastructural limitations directly restrict the practical use of technology as support for UDL [13]. Addressing this problem requires sustained investment rather than symbolic adoption. Without reliable infrastructure and targeted staff development, digital tools cannot function as meaningful pedagogical supports, and UDL risks reinforcing existing inequalities instead of reducing them.

4.3 Policy Alignment and Systemic Integration

At the policy level, UDL must be embedded coherently within national and regional early childhood education frameworks rather than treated as an add-on initiative or special education supplement. National and local policies governing inclusive education, curriculum design, and teacher accreditation should align explicitly with UDL principles, including those articulated in the 2024 UDL Guidelines 3.0, which foreground equity, learner identity, belonging, and the reduction of systemic bias [4]. Funding models should likewise recognize collaborative planning time, specialist coaching, and resource provision as core components of inclusive practice rather than optional enhancements. Equally important is the need for cultural responsiveness within policy design. UDL implementation is not culturally neutral. Its effectiveness depends on meaningful adaptation to local knowledge systems, linguistic diversity, and community practices.

5.0 CONCLUSION

The review demonstrates that teachers conceptualize UDL as a universal, inclusive, flexible, and ethically grounded pedagogical framework. The implementation is influenced by belief systems, professional identity, planning structures, collaborative cultures, data-informed practice, institutional support, and situational conditions. Teachers experience UDL not as a technical model alone, but as an integrated belief–practice system that transforms how they understand learners, design instruction, construct classroom environments, and enact inclusion in early childhood inclusive classrooms.

REFERENCES

1) Sanches-Ferreira, M., et al. *Building inclusive preschool classrooms: How desirable and feasible is a set of strategies that facilitate teacher-child relationships?* in *Frontiers in Education*. 2022. Frontiers Media SA.
2) Shardey, E., F. Nabi, and W. Vortia, *Teacher Readiness for AI and Digital Tools in K-12 Classrooms: A Review of Professional Development Trends and Gaps.* International Journal For Multidisciplinary Research, 2025.
3) Mullick, J., et al., *" The possibility of meeting the needs of all children": A framework for enhancing inclusive STEAM pedagogy in early childhood settings.* International Journal of Educational Research, 2025. **133**: p. 102705.
4) Basham, J.D. and K.A. Lowrey, *(Re) Considering Universal Design for Learning.* Journal of Special Education Technology, 2025: p. 01626434251361443.
5) Yu, S. and E. Cho, *Preservice teachers' attitudes toward inclusion in early childhood classrooms: A review of the literature.* Early Childhood Education Journal, 2022. **50**(4): p. 687-698.
6) Vortia, W. and N.K. Djokoto, *DATA-DRIVEN DECISION MAKING IN K-12 EDUCATION: A REVIEW OF ASSESSMENT TOOLS AND INSTRUCTIONAL INTERVENTIONS.* EPRA International Journal of Environmental Economics Commerce and Educational Management, 2025.
7) Han, C. and J. Lei, *Teachers' and students' beliefs towards Universal Design for Learning framework: A scoping review.* Sage Open, 2024. **14**(3): p. 21582440241272032.
8) Almumen, H.A., *Universal design for learning (UDL) across cultures: The application of UDL in Kuwaiti inclusive classrooms.* Sage Open, 2020. **10**(4): p. 2158244020969674.
9) Rusconi, L. and M. Squillaci, *Effects of a universal design for learning (UDL) training course on the development teachers' competences: A systematic review.* Education Sciences, 2023. **13**(5): p. 466.
10) AlRawi, J.M. and M.A. AlKahtani, *Universal design for learning for educating students with intellectual disabilities: A systematic review.* International journal of developmental disabilities, 2022. **68**(6): p. 800-808.
11) G. Coogle, C., S. Storie, and N.L. Rahn, *A framework for promoting access, increasing participation, and providing support in early childhood classrooms.* Early Childhood Education Journal, 2022. **50**(5): p. 867-877.
12) Hovey, K.A., A.N. Gauvreau, and M.J. Lohmann, *Providing multiple means of action and expression in the early childhood classroom through a universal design for learning framework.* The Journal of Special Education Apprenticeship, 2022. **11**(2): p. 7.
13) Bray, A., et al., *What next for Universal Design for Learning? A systematic literature review of technology in UDL implementations at second level.* British Journal of Educational Technology, 2024. **55**(1): p. 113-138.
14) Cumming, T.M. and L. Gilanyi, *'Our Classes Are Like Mainstream School Now': Implementing Universal Design for Learning at a Special School.* Australasian Journal of Special and Inclusive Education, 2023. **47**(2): p. 63-77.
15) Sharma, B.U., *The role of co-teaching in enhancing instructional strategies in inclusive classrooms.* Int J Res Sci Innov, 2025. **12**(5): p. 1248-1253.
16) Almeqdad, Q.I., et al., *The effectiveness of universal design for learning: A systematic review of the literature and meta-analysis.* Cogent Education, 2023. **10**(1): p. 2218191.
17) Bruns, L., *Implementing Universal Design for Learning in the Inclusive Early Childhood Classroom.* 2024.
18) Chen, D. and J. Dote-Kwan, *Preschoolers with visual impairments and additional disabilities: Using universal design for learning and differentiation.* Young exceptional children, 2021. **24**(2): p. 70-81.

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

19) Gauvreau, A.N., M.J. Lohmann, and K.A. Hovey, *Circle is for everyone: Using UDL to promote inclusion during circle times.* Young Exceptional Children, 2023. **26**(1): p. 3-15.
20) Guo, P. and Z. Wang, *Implementation fidelity of universal design for learning and effects on student achievement engagement and belonging.* Scientific Reports, 2025.
21) Han, C. and J. Lei, *A scoping review of pre-service teachers' beliefs about implementing the universal design for learning framework.* Humanities and Social Sciences Communications, 2025. **12**(1): p. 1-13.
22) Haneef, M., et al., *Exploring Teacher Attitudes toward the Implementation of Universal Design for Learning in Inclusive Classrooms.* Research Consortium Archive, 2025. **3**(4): p. 825-845.
23) Pikus, A.E., et al., *Nature for all: utilizing the universal design framework to incorporate nature-based learning within an early childhood inclusive classroom.* Teaching Exceptional Children, 2025. **57**(5): p. 338-347.
24) Sewell, A., A. Kennett, and V. Pugh, *Universal Design for Learning as a theory of inclusive practice for use by educational psychologists.* Educational psychology in practice, 2022. **38**(4): p. 364-378.
25) Lohmann, M.J., K.A. Hovey, and A.N. Gauvreau, *Universal Design for Learning (UDL) in inclusive preschool science classrooms.* Journal of Science Education for Students with Disabilities, 2023. **26**(1): p. 1-12.
26) Lambert, R., et al. *"UDL is a way of thinking"; theorizing UDL teacher knowledge, beliefs, and practices*. in *Frontiers in Education*. 2023. Frontiers Media SA.
27) Lohmann, M.J., K.A. Hovey, and A.N. Gauvreau, *Using a Universal Design for Learning Framework to Enhance Engagement in the Early Childhood Classroom.* Journal of Special Education Apprenticeship, 2018. **7**(2): p. n2.
28) Lowrey, K.A., A. Classen, and A. Sylvest, *Exploring ways to support preservice teachers' use of UDL in planning and instruction.* Journal of Educational Research & Practice, 2019. **9**(1): p. 261.
29) Massouti, A., *Pre-Service Teachers' Perspectives on Their Preparation for Inclusive Teaching: Implications for Organizational Change in Teacher Education.* Canadian Journal for the Scholarship of Teaching and Learning, 2021. **12**(1): p. n1.
30) Chick, J.C., L. Morello, and J. Vance, *Universal Design for Learning as an Equity Framework: Addressing Educational Barriers and Enablers for Diverse Non-Traditional Learners.* Education Sciences, 2025. **15**(9): p. 1265.
31) Egbunu, A.S. and Y.M. Cudjoe-Mensah, *DEVELOPMENTAL CHALLENGES IN CHILDREN FROM SINGLE-PARENT FAMILIES: INTERVENTION STRATEGIES.* EPRA International Journal of Multidisciplinary Research (IJMR), 2025.

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/